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# Sea turtles and their conservation in Andaman and Nicobar Islands

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## ABSTRACT

Four species of sea turtles, leatherback, hawksbill, green and olive ridley, occur along the Andaman and Nicobar archipelago, which consists of more than 300 islands with a coastline of about 1,962 km. The green turtle is the most common species in Andaman and Nicobar Islands. Sea turtles formed an important source of food for the original inhabitants of the Islands. Andaman and Nicobar Islands have the best nesting beaches and foraging grounds for sea turtles in India. The Islands are unique for sea grass meadows with nine species of sea grass. The leatherback sea turtle is unique as their nesting population in Nicobar Islands formed one of the four colonies in Indo-Pacific region with more than 1000 individuals. Hawksbill turtles in the Islands are considered an important population in the northern Indian Ocean area and are the largest in India. Hawksbill feeding grounds are reported all around Andaman and Nicobar Islands and they are the most commonly hunted turtles in these islands. All the four species are included in Schedule I of the Indian Wildlife (Protection) Act, 1972 and listed in Appendix I of Convention of International Trade in Endangered Species of Wild Fauna and Flora (CITES). But, still the original inhabitants of the Islands are exempted from the Indian Wildlife (Protection) Act, 1972. In Andamans, 94 islands have been notified as sanctuaries, which include 30 islands with sea turtle nesting sites. Poaching, sand mining and incidental catch are the major threats to sea turtles in Andaman and Nicobar Islands and monitoring of sea turtles in many parts of the Islands is difficult owing to remoteness and weather.

**KEYWORDS:** Andaman and Nicobar, seaturtle, conservation, threats, green, hawksbill, olive ridley, leatherback

## INTRODUCTION

The Andaman and Nicobar Islands (Figs.1 and 2), situated from 6°45' N to 13°41' N (740 km) and 92°12' E to 93°57' E (190 km), have a total area of 8249 Km<sup>2</sup>. They are separated from the Southeast Asian coast by the Andaman Sea and by Malacca Strait from Sumatra on the South. On the western side, it is separated from Indian Peninsula by the Bay of Bengal. Myanmar coast is about 280 km from the northern tip of Andaman and Nicobar Islands. The Andaman group of islands comprise of about 306 islands and that of the Nicobar group more than 23 islands. Humans inhabit twenty four islands of Andaman group and 12 of Nicobar group. The entire Nicobar group is a tribal reserve. In 1978, 94 islands in the Andamans have been notified as sanctuaries, which include 30 islands confirmed for sea turtle nesting and two marine national parks. Andamans has a coral reef stretch of over an area of 11,000 km<sup>2</sup>. and that of Nicobar Islands 2,700 km<sup>2</sup>. The Andaman and Nicobar Islands have fringing reefs around the east coast and a long barrier reef (320 km) on the west.

Five of the seven species of sea turtles occur along the Indian coast. They are olive ridley, green, hawksbill, leatherback and loggerhead. All five

species have been reported to occur along Andaman and Nicobar group of islands (Bhaskar, 1979; Bhaskar and Rao, 1992; Murugan, 2003). Except the loggerhead, all other four species nest along the island's coast. In general, the known nesting beaches are Great Nicobar, Little Andaman, Rutland, Middle Andaman, Katchal, South Sentinel, South reef and Teris Islands (Figs.1 & 2). Great Nicobar Island is unique in that all four species occur along its southeast coast (Sivakumar, 2002). Andrews et al (2001) have studied the status and distribution of marine turtles around Andaman and Nicobar Archipelago.

## SEAGRASS MEADOWS AND SEAWEED RESOURCES

The distribution of seagrass meadows is discontinuous along the coast of the Andaman and Nicobar Islands (Das, 1996). Nine species out of 14 known sea grass species from Indian coast have been recorded from Andaman and Nicobar Islands and *Thalassia hemprichii* is the most common species. Among the Andaman group of islands, South Andaman group has eight species and Little Andaman group has six species of sea grass. In the Nicobar group of islands, Camorta east has nine

species and Pilomilow South has seven species. Green, olive ridley and hawksbill are the commonly encountered turtles in the sea grass meadows. Fifty five seaweed species have been recorded in Andaman and Nicobar Islands (Gopinathan and Panigrahy, 1983). They are represented by 16 species belonging to Chlorophyceae, 17 species belonging to Phaeophyceae and 22 species belonging to Rhodophyceae.

### GREEN TURTLE

The green turtle is the most common species in the Andaman and Nicobar Islands. They nest almost year around (Sivakumar, 2002). The main nesting period is from June to November with peak nesting in July. The green turtle nests in about 37 nesting sites in the Andamans including Little Andaman and 12 sites in the Nicobar group. The main nesting sites include three nesting sites on the east coast of Baratang Island in Horsford, Rawlen's and Grieve Bays, north of Outram Island, Long and North Passage Islands and Petri and Bluff Islands along West coast, Robert Bay in Middle Andaman Islands, and South Sentinel Island. South Sentinel Island is an important nesting ground (Bhaskar, 1993). The main threats for this turtle are poaching for meat and eggs.

Andrews and Tripathy (2004) have given a detailed account on the turtle nesting sites in the Andaman and Nicobar Islands. The nesting sites on the west coast of the North Andamans include the islands of Landfall, West, White cliff, Reef, Paget, Point, Snark, Kwangtung, Latouche and North Reef. On the east coast of the North Andamans, they nest along East, Pocock, Trilby, Excelsior, Table, Delgarno, East Turtle, Temple, Rose, Smith, Ross, Craggy and Sound Islands. Along the North Andaman coastal side, their nesting has been reported in Pine Bay, Beale Bay, Casuarina Bay, Coffee Dera, Lamia Bay, Ramnagar and Taralait Bay. Long, North Passage, East coast Baratang are the islands reported for green turtle nesting along the east coast of the middle Andamans. Besides, the nesting has also been observed along the coastal locations of Robert Bay, Karmatang, Paikat Bay, Woteng and Cuthbert Bay. Along the west coast of the middle Andamans, Interview, South Reef, Tuft, Hump, Anderson and Flat Islands are the reported nesting sites. Along Ritchie's Archipelago, the nesting has been observed in North Button, Middle Button, South Button, North Passage, Outram, Havelock, Inglis and Neil Hugh Rose Islands.

In South Andamans, green turtles nest along eighteen islands viz. Spike, Bluff, Tarmugli, Grub, Belle, Red skin, Boat, Jolly Boy, Rutland, West Twin, East Twin, North and South Cinque, Passage, North and South Sister, North and South Brother.

Apart from this, Ike Bay, Maduban beach and Corbyn's Cove are the other green turtle nesting areas in the South Andamans. Green turtles are the common nesting turtles in Little Andaman Island like South of Bumila Creek, North and south of Jackson Creek, West Bay, South Bay, North of Hut Bay and Butler Bay (Andrews and Tripathy, 2004).

Along Car Nicobar in the Nicobar group of islands, only green turtle nesting has been reported. But in Terassa and Katchal Islands of the Nicobar Islands, green turtle nests along with hawksbill, olive ridley and leatherback. They nest along with hawksbill in Meroe, Trak and Treis Islands. In Car Nicobar, only green turtle nesting has been reported. Along the east coast of Little Nicobar, only green turtles nest in Pulo Bahau, Pulo Ulon and Bivaye Islands. Whereas, it nests along with hawksbill turtles in Pulo Kiyang, Bahuva, Tauhiyol, Muhincohn, Akupa, Makachua and Gota Bay. In Great Nicobar Island, along the west coast, green turtles nest along Rokoret, Renhong, Pulo Kunji, Casuarina Bay, Alexandra River Mouth and Pulo Bhabi Islands. Along the east coast, green and leather back turtle nests along Laful Anch Creek, Navy Dera, Southeast Great Nicobar and Saphed Balu Islands (Andrews and Tripathy, 2004).

### OLIVE RIDLEY

The olive ridley nests only on the east coast of the Andaman Islands and 12 sites have been observed. In the Nicobar group, three sites have been reported for olive ridley nesting. They nest during October to April with a peak from January to February. On the east coast of the North Andamans, olive ridleys nest along Smith Island. Along the coastal side, they nest in Casuarina Bay and Taralait Bay. They also nest along Paikat Bay and Cuthbert Bay of the Middle Andamans. In the South Andamans, olive ridley nests in Rutland Island. In the Little Andaman Islands, olive ridleys nest along North of Hut Bay and Butler Bay along with green turtles (Andrews and Tripathy, 2004). Bhaskar (1993) has also reported Madhuban in South Andamans, Karmatang in Middle Andaman, Ramnagar and Coffeeder beaches in North Andaman and Trilby and Hump Islands, 3 beaches on the West coast of Little Andaman Islands as olive ridley nesting sites.

Bhaskar (1993) reported that Great Nicobar is the major location for olive ridleys with four nesting beaches in the Nicobar group of islands followed by Terassa Island. Andrews and Tripathy (2004) reported that in Great Nicobar, olive ridleys nest along Casuarina Bay and Alexandra River Mouth along with green and leatherback turtles.

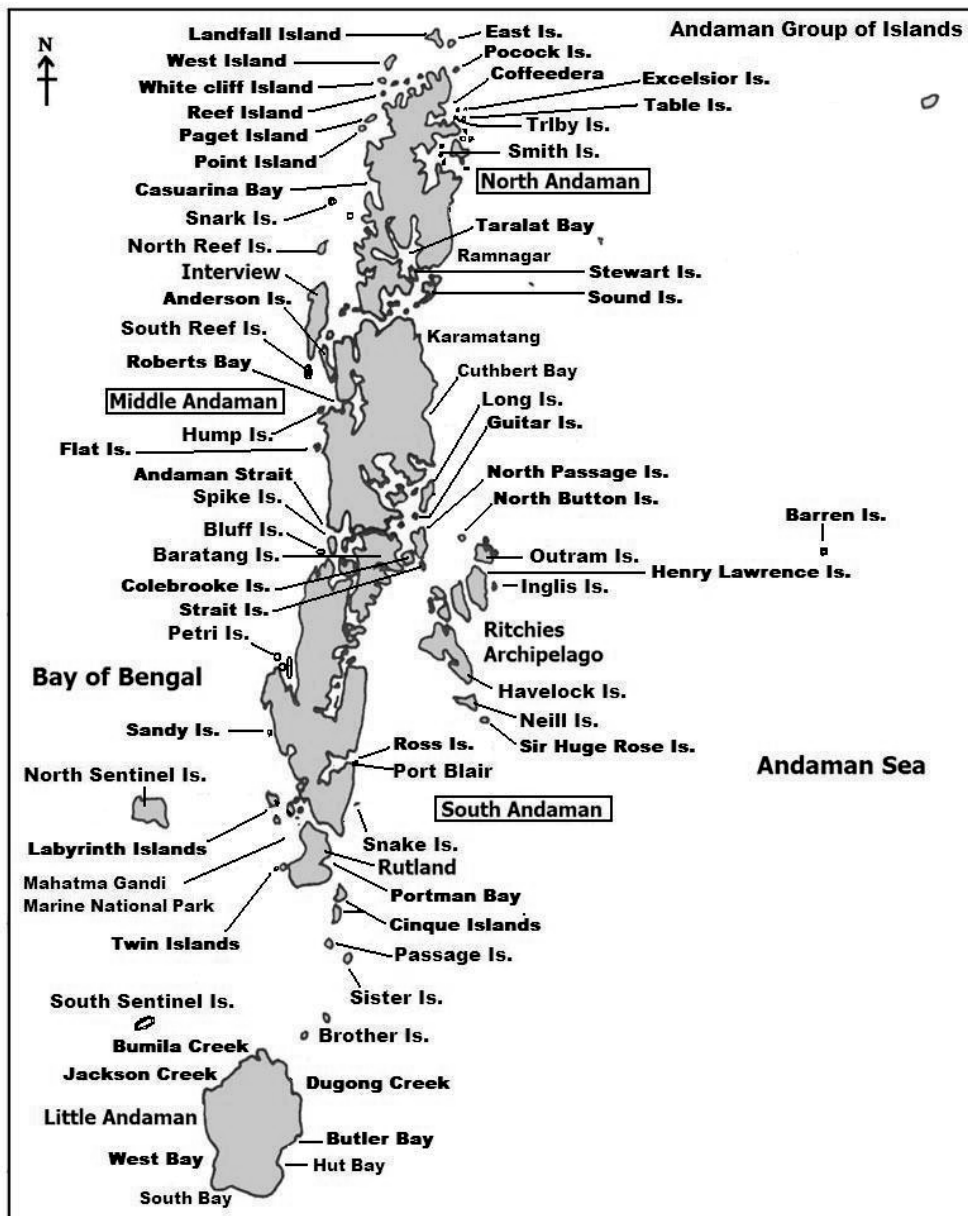


Fig.1. Map showing the Andaman group of Islands

### LEATHERBACK

In the Andaman and Nicobar Islands, 23 sites have been reported as leatherback turtle nesting sites. They are unique as their nesting population in the Nicobar Islands is one among the four important colonies in Indo-Pacific region with more than 1000 individuals. The mouths of Galathea, Alexandria and Dagmar rivers are the popular leatherback nesting sites in Great Nicobar Island (Bhaskar, 1979). The Leatherbacks tagged in Australia have also been observed in Galathea beach on the southeast coast of Great Nicobar Island (Andrews, 2000).

Leatherbacks nest along the the North Andaman coastal side of Coffee Dera and Taralait Bay. Karmatang and Cuthbert Bay are the two places reported in the Middle Andamans. In the South

Andamans, leatherback nesting has been reported in Rutland Island. Leatherback turtles also nest along West and South Bay of Little Andaman Island. In Nicobar Islands, leatherback turtles nest along the Terassa and Katchal Islands. They nest along with green and hawksbill in Pulo Kiyang, Bahuva and Tauhiyol and Muhincohn islands. In Great Nicobar, they nest along the islands of Rokoret, Renhong, Pulo Kunji, Casuarina Bay and Alexandra River Mouth. In South Bay Island, only nesting of leatherback and olive ridley turtles have been reported (Andrews and Tripathy, 2004). Bhaskar (1979) reported that mouths of Galathea and Dagmar rivers are the popular leatherback nesting sites in Great Nicobar Island.

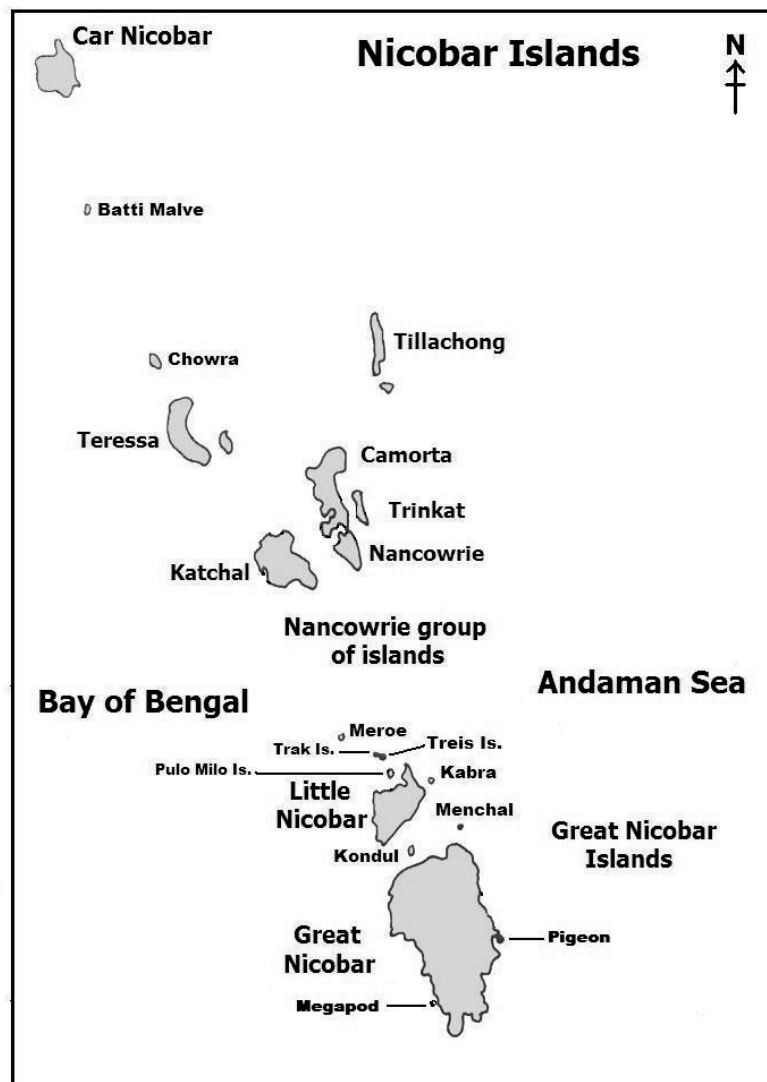


Fig.2. Map showing the Nicobar group of Islands

### **HAWKSBILL**

In the Andaman group, 27 hawksbill nesting sites (26 islands) have been reported. They nest in 12 sites in the Nicobar group and 3 sites in Little Andaman. Peak nesting season is from September to October. The hawksbill turtles are also considered as an important population in the northern Indian Ocean area and are the largest in India (Andrews and Tripathy, 2004). Hawksbill feeding grounds have been reported all around the Andaman and Nicobar Islands and are the most commonly hunted turtles in these islands for meat and eggs. It is also an important constituent of incidental catch.

In the North Andamans, hawksbills have been reported to nest along Landfall, Point, Snark, Latouche and North Reef islands. On the east coast, they nest along East, Trilby, Excelsior, Delgarno,

Temple, Ross, Craggy, Sound Islands. In the East coast Baratang island of Middle Andamans, hawksbill nesting has been reported. The hawksbill turtles nest in Interview, South Reef, Tuft, Hump and Flat Islands along the west coast of middle Andamans. They also nest along Ritchie's Archipelago except in North Passage, Outram and Havelock islands. In the South Andamans, hawksbill nesting has been reported in Bluff Island and Maduban beach (Andrews and Tripathy, 2004). Bhaskar (1993) reported that the most important Hawksbill nesting sites include North Brother and Snake Islands in the South Andaman (Bhaskar, 1993).

In the Nicobar Islands, hawksbill nesting has been reported in Pulo Milo and they nest along with green, olive ridley and leatherback turtles along

Terassa and Katchal Islands of Nicobar Islands. They nest with green turtles in Meroe, Trak and Treis Islands. In Pulo Milo, only hawksbill nesting has been reported. Hawksbill nesting along with leatherback and green has been reported from Pulo Kiyang, Bahuva and Tauhiyol and Muhincohn Islands. In Great Nicobar, hawksbill nests along the Saphed Balu Island (Andrews and Tripathy, 2004).

### THREATS AND PROBLEMS

Sea turtles, even in isolated the Andaman and Nicobar Islands, face difficulties mainly due to anthropogenic disturbances. The threats to sea turtles include poaching by feral dogs and humans, sand mining, incidental catch, habitat degradation and tourism. Turtles formed an important food source for the original inhabitants of the Andaman and Nicobar Islands. Original inhabitants of the islands carried out subsistence hunting at offshore or by capturing nesting turtles on beaches. They also collected turtle eggs, which formed a valuable protein source. In the Andaman Islands, all the species except the leatherback were hunted for meat. In Nicobar, cooked turtle meat is consumed regularly. Sometimes, it is taken raw minced and mixed with coconut. The green and hawksbill turtles are the species usually eaten. The green turtle meat was sold at Rs. 3 to 5 per kg as late as 1970 in Port Blair markets.

Most of the turtle nesting sites in the islands are remote and inaccessible. Hence, monitoring is quite difficult. Inadequate staff, lack of proper infrastructure facilities, equipment etc. also hinder the effective monitoring process. About 69% of the land area of 6,408 km<sup>2</sup> in the Andamans has been marked as reserves and protected areas and out of which 36% is tribal reserves. The entire Nicobar group is a tribal reserve and has four wildlife sanctuaries, three of which are islands. The occurrence of seagrass meadows represented by nine species and fifty five species of seaweeds suggest that Andaman and Nicobar Islands could be a potential foraging ground for green turtles.

The resources of the Andaman and Nicobar Islands are protected under various acts including Wildlife Protection Act 1972, Convention on International Trade in Endangered Species of wild flora and fauna (CITES), Environment (Protection)

Act, 1986, The Coastal Regulation Zone Notification 1991 (Notification No.S.O.114(E) of 19 February 1991) and The Fisheries Act of A&N Islands. Though all 5 species have legal protection under Schedule I of the Indian Wildlife Protection Act

(1972), original inhabitants of the Andaman and Nicobar Islands are still exempted from the Indian Wildlife (Protection) Act. Yet, the developmental activities including tourism are the hindrance to the turtles nesting along the inhabited islands. Nevertheless, the remoteness and the inhospitable environment make it difficult to assess the status of sea turtles in the islands of Andaman and Nicobar.

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